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ABSTRACT

The adoption process for personal computers by faculties in business administration and teacher education at the graduate college and university level was studied. Diffusion Theory (Roberts, 1962) was tested as it related to the adoption of an innovation and the adoption process as the individual passed through the stages of the process (awareness, interest, evaluation, trial, and adoption--the stage at which the individual decides whether or not to actually purchase the product). The study sample consisted of 412 full-time faculty members at 5 accredited graduate schools and the instrument used was a self-reporting questionnaire. It was found that the adoption process did not have a moderating effect on the business administration and teacher education faculty at either the awareness or adoption stages. The questionnaire selected did not have a moderating effect to support the adoption process, possibly because the sample size was too small. Both the business and teacher education faculties showed common response to certain variables, such as the price (ranking first in importance), product attributes (ranking second), information about the product (ranking third), and usage or function (ranking fourth). A literature review considers the evolution and importance of the personal computer as it has been integrated into the college curricula, and the various uses of the personal computer, along with research in the field of computer-oriented programs. The study questionnaire is included. (SW)

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THE ADOPTION PROCESS FOR PERSONAL COMPUTERS BY FACULTIES IN BUSINESS ADMINISTRATION AND TEACHER EDUCATION AT THE COLLEGE AND UNIVERSITY LEVEL

BY

GEORGE P. KEHR

B.B.A., SAINT FRANCIS COLLEGE, 1965
M.B.A., LONG ISLAND UNIVERSITY, 1970
C.A.G.S., PACE UNIVERSITY, 1982

A DOCTORAL PROJECT
SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF BUSINESS ADMINISTRATION

INTERNATIONAL GRADUATE SCHOOL

JANUARY 1986

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In the light of major modern technology and innovations, a predictable and authentic revolution is currently under way on college and university campuses as increasing numbers of faculty members adopt the use of personal computers as necessary components of their respective syllabi and research. Two departments in particular, business administration and teacher education, seem to have manifested the greatest interest in adopting computers for comprehensive utilization by faculty and students alike.

This study, in its descriptive phase, focuses on the various stages whereby the personal computer is gradually, but methodically, introduced into the business administration and teacher education faculties cited above. In its analytical phase, a deeper and more inclusive probing of the nature of computer adoption processes is available with corresponding documentation. The final phase of this study examines the proscriptive and statistical conclusions drawn from a number of sources and resources offering several recommendations for the continuance of scholarly studies in this area. Statistically, there is sufficient evidence that the adoption process of personal computers by business administration and teacher education faculties on the college and university level is emphatically demonstrable, methodically predictable, and psychologically viable.

While the statistical portion of this study reflects the major statement volume-wise, both the descriptive and analytical phases contribute the most substantial evidence for the undertaking of a project of this magnitude. Of these two latter phases, definition and purpose are the mode of inquiry, with proof as the natural outcome of the statistical phase.

As attested to by this study, the description of and arguments for the adoption process of personal computers by selected business administration and teacher education faculties are sound and deserving of close on-going multi-faceted examination. This study contributes to the body of academic knowledge through extended and intensive testing of the adoption theory as it relates to a new product on the market, the personal computer.

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To his secretaries, Mrs. Audrey Carnright, and Mrs. Patricia Villari, the researcher expresses a sincere "thank you" for their generous and loving work done on his manuscript during its various stages of development.

Finally, the most important, the author wishes to thank his wife Cecile, his daughters Noel and Marissa, and his sister Veronica for their constant understanding, love, and affection during this difficult stage in his life. Furthermore, the author wishes to thank his late mother Mrs. Carmela Kehr, whose strength and wisdom gave him the discipline to undertake this study.

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CHAPTER I

PROBLEM STATEMENT

Description and Background

Technological progress and innovation in most product areas have significantly increased within the past decade. Above all, no area has experienced a more rapid growth than that of the computer usage. It has contributed to change in almost every aspect of life. Higher education has most certainly felt the impact of this technology and its progress. Academicians must evaluate the impact of this dramatic change upon their teaching methods, the scope of their respective disciplines, their research and above all, on the students' learning process.

The personal computer or microcomputer (used synonymously as a type of computer) has appeared to present a learning tool which offers possible advantages in the field of education. This phenomenon is due in large part to its potential use in the learning process. The presence of integrated software packages adaptable for educational uses make the personal computer even more attractive to the academic consumer.

It is commonly accepted that individuals tend to resist change in varying degrees. Therefore, an assumption can be made that the adoption of personal computers by academicians will indicate levels of resistance.

According to empirical studies, on the other hand, the early adopters of new products were found to be better

educated, have greater income, and enjoy higher status occupations than did non-adopters (Boone 1970; La Bay and Kinnear 1981; Rogers and Shoemaker 1971). It can safely be assumed that educators, especially college and university educators, have more education and higher status occupations than do most other groups. Certainly important considerations in the adoption process are the price of the product and its potential for personal and professional applications. The price of a personal computer is affordable for most college and university faculties. Nowadays, some institutions of higher learning are required to supply or make available personal computers for faculty use.

The general environment for computer adoption among professionals in higher education indicates that computers are essential classroom tools and are an important supplement to the textbook.

The degree of necessity, urgency, and readiness in using the computer varyies among people. In higher education, various factors are important. These include classroom use, faculty research and institutional record keeping. Faculty in different disciplines will show a different degree of necessity for adoption.

The focus of the study was to examine the problem presented by the adoption process for personal computers by faculties in business administration and teacher education at the graduate college and university level. The study

should aid in identifying the buying behavior of both groups as well as in determining the characteristics of the adopter and non-adopter segments.

More specifically, the problems to be clarified are: The ascertainment of the adoption process for personal computers for academicians in business administration and teacher education departments at the graduate college and university level are researched here, as well as the identification of different adoption behaviors, if any, between the two groups.

Significance of the Study

Although recent studies have been made evaluating the consumer adoption process, no study has been systematically conducted on the adoption process for personal computers in higher education on the graduate level in business administration and teacher education. The need for an in-depth study is appropriate at this time in view of the expanded role of personal computers in education.

This study identifies the characteristics of adopters for personal computers among educators of business administration and teacher education at the college and university level.

The results of this study should develop a better understanding of the personal computer consumer in the higher education market. Academicians will be able to develop a better understanding of the factors that

influence the buying behavior for personal computers. The personal computer marketer should be able to develop a better understanding of the adoption process in higher education and to adjust his strategies accordingly.

This study should contribute to the body of knowledge by further testing adoption theory as it pertains to a new product, the personal computer.

Limitations of the Study

Despite the confidence that many potential problems could be overcome in the present study, several limitations nevertheless existed. These are listed and briefly discussed below.

All the measures employed in the research are self-reports. The difficulty with the use of all perceptual, self-report measures is that relationships between independent and dependent variables may be spuriously inflated due to such factors as common method variance.

The results obtained from the use of self-report measures should be interpreted cautiously. This position suggests that the results from the present research must be viewed as having a limiting factor, and that additional future research is needed.

Because this research project is limited in scope, the development and validation of new, alternate, dependent variables would have created inordinate time demands,

negatively affecting the primary focus of this research design.

Particular prior personal computer knowledge and experience may have influences beyond the measures of the self-reported questionnaire. Furthermore, this prior knowledge and experience may render certain questions more or less appropriate. It should be noted here that major fields of study of the responding faculty members may influence how the questionnaire was answered.

The present findings may not apply to women, owing to the low percentage of women in the sample population. The number of women was limited by the available population.

Delimitations of the Study

Many studies that are attempted fail even before the researcher starts them because he has not limited his problem to a sufficiently specific area. The delimitations are briefly listed below:

- Only faculty members in religious affiliated graduate schools in a five state region, i.e., New York, New Jersey, Connecticut, Rhode Island, and Massachusetts, participated in this study.

- Only business administration and teacher education faculty members were invited to respond.

- No attempt was made to compare faculty on the basis of age, sex, highest degree achieved, educational institution attended or economic status.

- No attempt was made to determine the relationship between business administration and teacher education faculty with reference to individual areas of concentration and their performance on the questionnaire.

- No attempt was made to determine the predictive weight of each variable.

CHAPTER II

LITERATURE REVIEW

Overview of Personal Computer

Computing has become critically important to higher education. Colleges and universities budget millions of dollars every year to encourage computing for instruction, research and administration. However, there is still much to learn about the crucial task of implementing successful computer-oriented programs, especially in academic areas that lie beyond the spheres of science and technology.

Available literature describing the history and development of the personal computer is abundant. A brief discussion of the evolution of this technological milestone is in order here, because it sheds light upon the larger issues identified and isolated in this essay.

Historians and sociologists have demonstrated through their research findings that wartime creates particular demands for innovation in technological designs induced by the need to know vast quantities of information at a rpaid pace. To this end, the first recorded achievement in formal computerization was attributed to Howard Aiken's Mark I, an electro-mechanical computer introduced at Harvard University, under the aegis of IBM, during the period 1939 to 1944. Concurrently, George Stibitz was designing a relay computer for Bell Telephone Laboratories. The fact that both inventions were realized independently of each other indicated that the time was ripe for the

emergence and utilization of computational equipment, and that wartime, in particular, helped to encourage these important developments.

World War II provided the impetus for government intervention in support of various projects that would assist in solving its disparate problems. As a direct result of these wartime needs, the government funded a group of young engineers employed at the Moore School of Electrical Engineering at the University of Pennsylvania, who subsequently designed the first fully electronic digital computer to resolve ballistics problems. Directed by J. Presper Eckert, Jr., and John Mauchly, the ENIAC was completed and introduced during the period 1943 to 1946. This computer consisted of 18,000 vacuum tubes and required manual switch-setting to realize the desired programming.

After the war, Eckert and Mauchly launched work on the EDVAC, the first stored-program computer. John Von Neumann, a mathematician of reputed genius, provided the logical structure for this idea. These trail-blazers, with assistance from an ever increasing number of scientists and engineers, encouraged the growth and development of several clusters of schools of design for further research. Of particular interest was the continued work of Eckert and Mauchly, who completed the UNIVAC I in 1951. This machine was adopted by the Census Bureau and was, within a short time, available to the business community.

Because micro, or personal, computers are so abundant in number and usage today, it is necessary to realize that the embryonic stages of this revolutionary machine were completed only a little over three decades ago.

The year 1975 saw the marketing of the Altair, a personal computer available in a kit, with the assemblage of its separate parts required of the buyer. This microcomputer was quickly succeeded by the Radio Shack's ready-to-use computer in 1976. Apple introduced its own computer in 1977, and the resultant demand for it was nothing short of overwhelming. The Apple was rapidly assimilated into home, business, and school environments, and became a necessary adjunct to the curricula in grade schools, high schools, and colleges. During the next several years, the microcomputer business flourished through the sale of millions of hardware machines and software equipment. According to the information available in An Introduction to Computers and Information Processing (1985), a dramatic increase in sales took place in 1981, when IBM acquired 23 percent of the computer market. Based on the above evidence, there leaves little doubt about the efficacy, immediacy, or future of the personal computer as an integral part of the post-modern life-style.

Predictably, it is a relatively simple task to project that a computer-intensive environment should have its roots in a collegiate setting. Although colleges and universities have utilized computers for instructional

purposes for several decades, increased attention has been given to this subject, because of the widespread adoption of microcomputers for classroom use in recent years. Some colleges and universities already require their incoming freshman to purchase a microcomputer. This machine serves as a workstation suitable for scientific and technical applications, and has been largely responsible for contributing to faculty and student-oriented computer fluency. For example, Andrew T. Masland discusses in the Educational Record (Fall 1984) the process by which Smith and Swarthmore Colleges developed a comprehensive software catalogue for student application in a limited number of courses, while Colby College's computer project envisioned a series of seminars exclusively designed for faculty development. Experiments of these sorts have proven there is little doubt that campus-wide networks using microcomputers will ultimately allow for the improved flow of information through electronic mail and computer conferencing, with access to off-campus information services and other networks. The uses to which these machines can be put are numerous.

For example, Digital's Interactive Video Information System (IVIS) is capable of developing computer-based educational materials. This machine is a learning tool that combines a video display with interactive computing for the generation of texts and graphics.

Programs are already being developed which project beyond the capabilities of Microcomputers. These projections include the manipulation of figures and their attributes on the computer screen. Figures such as polygons, simple and complex curves, and three-dimensional surfaces are used, along with a series of attributes such as color, line, thickness, viewing angle, and coloring scheme. By adjusting these values, it is possible to create an almost limitless variety of pictures. A number of undergraduate programs can be written in the computer language Pascal, and then compiled directly on Microcomputers. The computer must be equipped with a red, green, and blue monitor and an extended bit map option for the realization of full color graphics.

Another example of extensive computer usage on the undergraduate level is the two-dimensional computer-aided design package developed for use on Microcomputers. This program assists in teaching computer-aided design to the more advanced student. Although it is intended for exclusive use in an educational environment, it contains many features of similar systems currently used in business and industry. This schema prepares a drawing as a series of lines and arcs. By using the key-pad to the right of the key board, a student can perform a variety of operations, such as the construction of a drawing in "levels," the translation and rotation of drawing parts,

"zooming in" on specific parts by altering their drawing scale, and the insertion of text, dimensions, and notes.

A case in point is elucidated by the present engineering manager of the Office of Telecommunications and Networking for Georgia Institute of Technology, Stayton D. Addison, Jr. In his recent article for the T.H.E. Journal, "From Freshmen to Faculty: Georgia Tech's Computer Network Serves All," (May 1985), Addison details the evolution of a campus-wide communications system which emonates from a central terminal. He notes the rapid acquisition of vital equipment shortly after the university's communication center opened in 1976. For example, field multiplexors, installed in 1977, permitted as many as sixteen terminals to exchange information with the computer center's mainframe computers. By 1981, the University had installed additional mainframes and minicomputers that were available to the campus-wide populus. The author also notes significant attitudinal changes in several professors who, only a few short years ago, content with access to a single terminal, now argue for a few processors in their labs, at least one in their office, and one at home.

No two colleges have structured their networks in identical patterns. Nonetheless, it appears clear that most facilities enjoy several factors in common. After gathering information relevant to various colleges' systems, computer expert and trend-spotter Peter Gwynne (Technological Review, 1984) has proposed the creation of a

"generic" college computer network, based loosely on the Massachusetts Institute of Technology's Project Athena. The backbone of the network is a fiber-optic cable that travels campus-wide, transporting electronic signals in the form of light pulses at ultra-high frequencies. Linked to the backbone, via "gateway" boxes, are several local area networks. Each of these networks contains a device which stores long term information for the local networks. Work stations dot the campus, and ensure the rapid acquisition of data from any campus facility. Spokes-people guarantee that using the work stations is as simple as picking up a telephone.

Based on current observation, careful description and hard data, the computer has achieved permanent status as a tool of enhancement in the field of education.

Prime sources in the computer-literacy field offered sound advice on several possible directions the computer race may take as it impacts on the curriculum in the educational system in general and advanced education in particular.

Education consultant Adam M. Gottlieb, through the assistance of a Harvard traveling fellowship (Fall 1985), investigated the international picture with respect to on-going computer-literacy programs in the schools. Among his findings, the result of interviews with administrators, teachers, researchers and students from America's three largest competitors--Britain, France, and Japan--was the

encouraging proof that on the average, American schools have as many microcomputers as do the schools in the world powers mentioned above. Gottlieb, however, laments the fact that computer-education bills have failed to make it through the Congress of the United States, given our national priority to reduce budget deficits. His research further indicated that once teachers and students gain access to microcomputers, the machines' effectivenss is frequently compromised by teacher resistance and ignorance.

Why the widespread adoption of microcomputers on campuses across the country? Colleges and universities have begun to take a serious look at the microcomputer as an essential component of the students' total educational experience. Several dozen schools have placed computers on students' desks, and the machine is rapidly becoming as much a part of the cost of education as the tuition dollar. Computer specialist Donna Osgood reported in 1984 that "students, faculty, and administrators are beginning to view the computer less as a computing machine and more as a broadly applicable tool for education and communication." Osgood further contends that colleges and universities in the private sector have greater financial and administrative flexibility. Accordingly, the introduction of microcomputers to these campuses has been accomplished at a more rapid pace than the acquisition of the same machines in public education systems.

Until recent years, educational computers took one of two forms, each equally dissatisfying from the student's point of view. The "skill and drill" method of computer usage plied the student with passive instruction in limited areas, while the timesharing method required of the student a sophisticated knowledge of computer language, and an intuitive awareness of accessibility. The arrival of microcomputers changed all this. They are designed to be on friendly and accessible terms with the student. A complex upper-level course is not needed to enable the student to work with ease and facility. The microcomputer is, in addition, a wise time-saving device for the harried student. Its functions include the reproduction of tables, charts, graphics, and the ability to reach any facility on campus at the touch of a finger.

Peter Gwynne, in his essay "Computers Are Sprouting in the Groves of Academe, (October 1984) affirms that "computers are becoming a routine part of the educational process on a growing number of campuses. But fundamental questions must still be answered about their influence on the way in which knowledge is taught and learned."

Another philosopher of futures, Stephan L. Chorover, writes and talks at length about the effects of computer programming on the student-teacher relationship (June 1984) Chorover asks salient questions about the affect of high-technology upon personal lives. Among them: (1) How will the evolution of computer systems affect the fundamental

form and content of the educational enterprise? (2) What effects will it have on the personal and professional lives of students and teacher? (3) How will it affect relationships between, and patterns of interactions among, individuals and groups?

Richard E. Mace, in his article for T.H.E. Journal (April 1985), talked about the development of the ideal campus information utility, which, he has conceded, has evolved into a mixture of several and sundry vendors' devices. Mace suggested that local and wide area networks will play an increasingly more important role in the construction of the electronic campus. He argued that the development of his ideal computerized campus must be methodically segmented into a number of separate service areas. Optimally, high-speed network extensions would be designed to radiate out from each of the service stations to all buildings within the service area boundaries. Mace concluded with the suggestion that the full value of an extended computer information system campus wide cannot be achieved unless easy access is available for those who need it at the time they need it. In such a network-rich design such as the one Mace proposed, the architecture itself would function as a total communications facility which provides for the systematic exchange of data and ideas among participating campus communities.

Keeping apace with computer systems' developing networks on college and university campuses is no small

undertaking. Every system studied gave rise to a myriad of possible new directions, approaches, and questions related to computer usage in academe. Lucia Golorzano reported in U.S. News and World Report (Oct. 7, 1985) on what happened when a college (Dartmouth) moved in one year from fewer than fifty personal computers to several thousand. Is the result a faceless, nameless, impersonal university environment? Drew University officials revealed that easy access to computers raised new questions about student cheating. To confront this potential temptation, Drew students were admonished by administrators that a computer disc is similar to the personal privacy of one's desk draw.

In addition to these concerns are nagging fears that such a rapidly changing technological picture could render multi-million-dollar computer investments obsolete. For example, Reed College has allocated for a quarter-million dollars per annum to be placed in an "obsolescence - precautions fund," with the expressed purpose of maintaining hardware and software abreast of current technology.

The Wall Street Journal Monthly Index provides regularly updated and essential information for potential buyers of college computer hardware. For example, the February 1985 Index acknowledged that the Stratus Computer signed an agreement which gave International Business Machines the non-exclusive right to sell Stratus's fail-safe computers. These computers are designed to continue

working if any part should fail. The same Index documented that few companies compete as zealously as Apple Computer and International Business Machines. Both companies are cooperating in the design of a working robot, dubbing it "the most reliable worker on the assembly line." The intended outcome of the great computer technology race? "More institutions of higher learning will provide more computers for more students and more faculty members this year. And more professors will introduce more computing in more of their courses." (Turner, 1985)

Judging from the abundance of information available in current professional journals, it is apparent that many institutions of higher learning are on the verge of an electronic renaissance unparalled in the history of educational milestones. Because a university is in essence a locus for information processing, it represents a primary force in the rapid dissemination and expansion of that information which directy responds to the larger segment of society's needs and demands.

Overview of Adoption Process

Current research indicates that faculties in colleges and universities across the United States have been demonstrably supportive of, or unalterably opposed to, the firm implication of the personal computer in their respective academic disciplines. This dissertation purports to raise questions having to do with those faculty

members selected at random but geographically homogeneous, from two specific graduate departments, business administration and teacher education, who chose to endorse the value of the personal computer, or who preferred to retain their "status quo" through choosing to continue to deal exclusively with the traditional tools of education, i.e., literature enhanced by text.

The primary domain of inquiry in this study focused on those faculty members who chose to adopt the personal computer in their academic commitments. What kinds of personal characteristics mark their individual identities? How does a potential adopter of a New Age product typically behave? How would researchers go about identifying him or her? Literature detailing current thought on these questions has become more accessible to students and scholars. A review of the more important findings in this literature is discussed under three headings: innovation, diffusion, and adoption.

Innovation

In the early literature on this topic, Joseph Schumpeter (1939), the economist, views innovation as being characteristic of new plants, equipment, firms, and leadership. Homer Barnett (1941), an anthropologist, referred to innovation as the means of cultural change. He defined his key term as "any thought, behavior, or thing that is new because it is qualitatively different from

existing forms. Still another economist, Abbott Usher (1954), suggested that innovation is not accidental but neither is it mechanistic. He proposes that it is a "cumulative-synthesis." By this he asserted that inventions are comprised of "many individual items of novelty" as well as elements which are familiar to us. Usher saw the innovation process as having four steps: perception of the problem, setting of the stage, the act of insight, and the critical revision. Robertson (1967) has defined this innovation as "a process whereby a new thought, behavior, or thing is conceived of and brought into reality." The same Thomas Robertson in his essay "The Process of Innovation and Diffussion of Innovation," (1967) referred to three kinds of innovation.

> ...continuous, which has the least disrupting influence on established patterns (product alteration-menthol cigarette); dynamically continuous which is more disruptive than continuous but does not generally later established patterns (new product or product alteration - electronic toothbrush), and discontinuous, which involves a new product and the establishment of a new behavior pattern (new product - computers). p. 14.

Hisrich and Peters (1984) regard innovation as an attractive idea or a new product which the buyer perceive as being unique.

Among the most important contributors to the building of current opinion and fact, as well as provoking speculation on the nature of the adoption process as it relates to the subjects under investigation in this paper,

are Mary Dee Dickerson and James W. Gentry, Professors of Home Economics and Marketing respectively. In their article on the "Characteristics of Adopters and Non-Adopters of Home Computers," profiles of the modern consumer are contrasted the consumer of post-Depression years, whose behavior indicated a low level of stability, conformity, and competency. According to Dickerson and Gentry's findings, the "new" consumer is more socially secure, upwardly mobile, artistically creative, and formally educated up to and beyond the college level, with many holding advanced graduate degrees. It is this type of individual, assert the authors, who is most likely to adopt a new product on the market. Further studies on their part reveal that

> Rogers (1961) listed five characteristics of innovations: relative advantage, compatibility, complexity, divisibility (trialability), and communicability (observability). Fliegel and Kevlin (1966) expanded this list to include characteristics such as financial cost, social cost, return to the investment, risk associated with the product, and efficiency of the product in terms of 1) time saving and 2) avoidance of discomfort. p. 225.

"Innovation" is a concept which contains myriad possibilities and is perceived by contemporary thinkers in a variety of ways. Most of the literature dealing with this abstraction includes some mention of newness as a necessary component of its definition, or essence. Prevailing thought on the nature of "innovation" includes some measure of disruption and displacement of tradition in

favor of the unique, unthought upon, novel way of approaching that which is routine and predictable in daily problem-solving. There is renewed interest in the need to invent, re-invent, and re-order the commonplace, that we can approach a given task with renewed vigor and fresh sensory apparatus.

Diffusion

Some of the early research on the nature and characteristics of diffusion was conducted by rural sociologists who set out to determine how new technology in farming could be communicated more rapidly. It was necessary to accelerate the spread of new technological information quickly because of the need to increase farm-product output to meet the demand caused by the population gains.

Everett M. Rogers (1962), a noted sociologist, conducted studies on the adoption of innovation by farmers over a fixed period of time. He refers, in his research, to innovators as those who are first to adopt a new concept, product, or idea. He identified five categories into which the innovator might be placed, based upon the time of adoption. These include innovation, early adopters, early majority, late majority, and laggards. Using these categories he developed a diffusion curve which resembles a curve for normal distribution. It may be said, then, that diffusion is the aggregate of individual

adoptions as represented on a normal distribution curve over a predetermined period of time.

One new product may diffuse at a greater rate than another, suggested Dickenson and Gentry, and it does so in direct proportion to the need collective consumers manifest for an item that is symbolically necessary for the realization of a "new look," or one that is functionally in demand to perform a particular service. The personal characteristics of each of these consumer groups differ widely in their approach to the adoption process. Symbolic innovators tend to purchase items more impulsively and for a shorter period of time than do technological innovators. The latter group relies on considered judgment and thoughtful deliberation before purchasing an item which has the combined benefit of long-term service and functional practicality.

What is important is not only the new product's general acceptance but also the speed at which it spreads over time, with time defined as the period it takes to diffuse (spread the adoption of) the new product. Both Katz and Lazarsfeld (1955) discovered that personal influence plays a more important role in the spread of adoption than does mass media. Therefore, the personal influence of Rogers' innovators and early adopters should have greater impact upon the diffusion of a new product than will other communication alternatives and channels.

In a later study Katz (1957) further advanced his theory that those people who are more influential than others are themselves predictably influenced to a greater degree by mass media than by those people who are somewhat less influential. Hence, the introduction and subsequent proven credibility of the "two-step flow of communications." This means that mass media influences opinion leaders and that they, in turn, influence others. Opinion leaders are spread throughout all levels of society.

Katz's theory on influence is in part derived from and confirms Elmo Roper's (1945) theory of "concentric circles" and by the Emery, Ault, Agee (1960) theory that the average person is likely to be affected more intensely and for longer periods by social pressures, group associations and clusters, and by the attitudes of the "opinion leaders" he knows than by direct influence of the mass media. For example, a consumer's final decision to purchase a personal computer is most likely the result of widespread opinion among peers and professionals alike that the distinct advantage of owning a persnal computer lies in the awareness that the system is capable of performing multiple tasks efficiently.

Available literature on the subject of "diffusion" revealed a patterned, historical approach to the definition. It became clear that the need for such a term grew out of a rapidly advancing system of technology which

regained new definitions to accommodate new uses of industrial concepts. Sociologists have been credited with altering the significance of "diffusion" to reflect the update and modernization of certain high-tech inventions in the hope that clarification of "diffusion" would simplify and deconfuse lives already too complicated by the post-industrial era.

Both the new product and the acceptance of the new product are frequently regarded in the literature on "diffusion" as equal factors leading to possible adoption. The swift acceptance of a new product is a vital determinent in that product's longevity, as would be sluggish acceptance a determinent in its decline and eventual rejection. Included also in the literature on this subject are such sub-topics as the nature of influence, the impact of mass media on public opinion, and the recognition of social pressure as integral factors in the study of "diffusion" in all its manifold forms.

Adoption

The adoption process is concerned with the individual and the stages through which the individual passes from the time when he first becomes aware of the existence of a new product until the time of the actual purchase of a new product. If the product is a small-ticket item, then adoption does not actually take place until repeated purchases of the product have been made by the same individual. If the product is a large-ticket item, in most

cases the individual has adopted the product when a single purchase is made. The most significant aspect of product adoption is the commitment made by the individual with regard to the product over an extended period of time (Schiffman and Kanuk 1983, Loudon and Della Bitta 1984, Robertson, Zielinski, and Ward 1984).

Recent findings by key scholars cited in this research (Robertson 1971, Rogers and Shoemaker 1971) have demonstrated that the adoption process identifies positively with the product's relative advantage, compatibility, divisibility, and communicability. At the same time, it identifies negatively with its complicated mechanism and price tag.

Characteristically, the profiles of early adopters reveal their preference for higher education, greater income, and more prestigious careers than do non-adopters. Adopters tend to be younger, hold bank cards, frequent automatic coded money machines, endorse solar energy systems, consult consumer information agencies, and use self-service pumps at gasoline stations. Their prime objectives appear to be saving time, working toward the ultimate in financial solvency, and taking greater risks with more confidence than the older adopter would have.

The stages in the adoption process through which the individual passes are awareness, interest, evaluation, trial, and adoption. In the awareness stage, the individual is initially exposed to the product. When

interest develops for the product the individual begins to seek more information. At the evaluation stage, a mental construct and application of the product takes place, along with the decision to try it. Trial, the use of the product on a small scale, necessarily comprises the fourth phase of a complex psychological task. Adoption occurs when full use of the product is achieved over an extended period of time. Rejection (non-adoption) may take place at any one of the five stages (Davis 1981, Hisrich and Peters 1984).

Current literature dealing with the meaning of "adoption" and the process by which it functions was helpful to the researcher in developing a glossary of ideas with which to undertake an investigation of the topic. Because it is such a key concept in this study, additional emphasis must, of necessity, be placed upon the uses to which it is put. A thorough familiarity with the applied literature on the subject is essential for ultimate understanding and correlation with this research's major statement. There was little doubt concerning the efficacy of "adoption" and the corresponding stages in its time and life span. Consensus among writers and scholars on the subject of adoption process was patent. Such subjects as the marketability of new products, the perceptual stages in the adoption process, and the commonly acceptable, unambiguous and lucid definition of "adoption" were dealt with by the great majority of experts in this bibliography, with an ample measure of skill and dexterity.

Summary

The literature which focused on innovation, diffusion of innovation, and the adoption process was broad in scope. These areas were reduced considerably when they are limited to the subject of personal computers. From a careful review of the literature, it is apparent that this study focused on a particular problem that has not, to date, been thoroughly examined in depth. A survey of the literature showed that many studies have been conducted on innovation, diffusion, and adoption. Some of these studies have been consigned to the area of personal computers, but no singular study exists that treats exclusively the adoption process for personal computers by academicians in business administration and teacher education departments at the college and university level. However, theories and concepts which may account for behavior and attitudes, have been perceived in the review of the literature.

The overview to this chapter highlighted the need for a thoughtful, conclusive, and scholarly study which focuses on the literature of current thought as it impacted upon the subjects under investigation in this paper, vis-a-vis innovation, diffusion of innovation, and adoption. Clearly, there is documented material available on these three items as general concepts. However, the task becomes limited in scope, and therefore more specialized for close analysis on a challenging and sophisticated level, while

the literature examines material related exclusively to the adoption process of personal computers at a particular level, by two specific graduate departments. Having thoroughly researched the current holdings in applied literature for this study, there remains no doubt whatsoever to underscore the need and relevancy for a project such as this. That the clarification of certain key vocabulary be established early in this study, it is hoped that the study itself will be expedited upon resolution of definition. To this end, the concepts of "innovation," "diffusion," and "adoption," are perceived by modern behaviorists in a certain way and for a particular effect.

This chapter contained research and literature on the subjects of innovation, diffusion, and adoption. The literature selected for this review attempted to clarify the concepts and conceptual conflicts surrounding these subjects as they relate to the process by which academicians adopt personal computers at the college and university level in business and education.

In sum, this chapter focused upon the evolution and importance of the personal computer as it has been integrated into college and university curricula, and the various uses to which the personal computer has been put, including representative programs extant at several schools of higher education. Emphasized was the fact that computer-based programs enhance lectures and class

participation, and facilitate learning by making examples and theories more concrete. Contained also in this chapter, the research of acknowledged pioneers in the field of computer-oriented programs. In addition, respective definitions for key terminology (innovation, diffusion, adoption) were explored in the light of this research question's philosophy of intent. Of prime importance was a brief profile of the personal characteristics of potential adopters.

From the information available in the literature reviewed, a more distilled view of the statement which this paper proposes to investigate should be evident on pages following.

CHAPTER III

METHODOLOGY

There are two main parts to this chapter. The first part describes the research design and subjects: academicians in teaching and research in Business Administration and Teacher Education. The second part explains the research question: the particular relationship of these academicians to the adoption process for personal computers.

Research Design

This study examined the dimensions of the adoption process. The relationship of academicians were studied with regard to their perceptions of selected variables in the purchase of personal computers. In line with these findings, faculty members in graduate schools of both Business Administration and Teacher Education were requested to fill out a self-reporting questionnaire.

The two basic components for research design are: the dependent variables - Business Administration and Teacher Education Faculty, and the independent variables - the influencing factors on the adoption process - price factors, information purpose or usage, product factors and brand used in the purchase of personal computers.

Dependent Variable(s): Business Administration and Teacher Education Faculty

The subjects selected to be investigated in this study of the adoption process for personal computers were academicians involved in teaching and research in the disciplines of business administration and teacher education departments at the college and university level.

The area of business administration was selected because business was one of the first areas in which the original main frame computer was utilized. In the late 1970's and on into the early 1980's the personal computer (also known as microcomputer, desktop computer) was introduced into big business and small business alike. Many educators in business observed this phenomenon and felt the necessity to teach something about the personal computer because it was emerging in their field.

The area of teacher education was selected because of the realization by educators that the personal computer, as a new technology, has tremendous instructional and educational implications and applications. The personal computer has emerged in their domain. They cannot ignore its presence and they must acknowledge its impact in their field.

The Adoption Process: Classification of the Subject

The adoption process is defined as the stages through which an individual passes from the time that he or she

first becomes aware of the existence of the product in the market to the time when the purchase actually occurs. For a large ticket item such as a personal computer, the individual has actually made a commitment to that product for an extended period of time when he or she purchases it.

Figure I is a schematic design of the five stages through which an individual passes during the adoption process. It must be noted that a product may be rejected at any stage in the adoption process (Hisrich and Peters 1984). However, it is at the beginning stages where the rejection for purchase of the personal computer would most likely occur. This stage can be offset depending on the amount of information found on the personal computer and how it can fulfill specific needs which will be discussed later on.

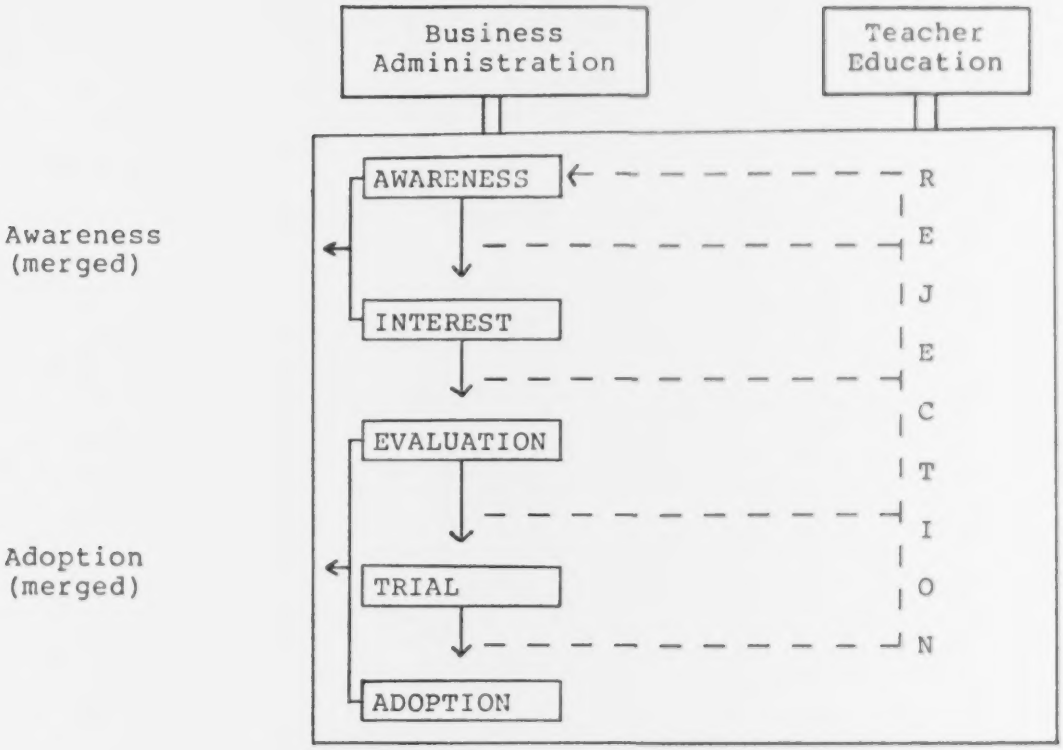
Figure I shows how individuals mentally assert their perception of need in making a personal computer purchase. The following explains each stage in the Adoption Process:

(1) Awareness Stage. At this stage the individual is exposed to the existence of the product in the market but has very little information and no well formed opinions or attitudes about it.

(2) Interest Stage. Here the individual becomes interested in the product and seeks additional information, knowledge, and understanding of what it is and what it can do.

FIGURE 1

ADOPTION PROCESS



(3) Evaluation Stage. At this stage the individual mentally applies the product to his present and anticipated future situation. This is predicated upon favorable attitudes toward the product. The consumer uses the information to reach a decision whether to try it.

(4) Trial Stage. Here the individual tries or tests the product to determine its utility in his or her own situation on a limited scale.

(5) Adoption Stage. At this stage the individual determines whether or not to use the product in a

full scale matter. At this point the individual decides whether to buy (adopt), postpone, or not to buy (non-adopt) the product. It must be noted that the product may be rejected at any stage during the adoption process (Hisrich and Peters, 1984).

In the Adoption Process the (1) Awareness Stage and the (2) Interest Stage are to be merged into one category to be known as the "Awareness Stage". The (3) Evaluation Stage, (4) Trial Stage, and (5) Adoption Stage will also be combined into one category, and referred to as the "Adoption Stage". This is being done for the purpose of analysis in Chapter IV in this study.

Independent Variables

The adoption process of the subjects is assumed to be influenced by various factors (independent variables) surrounding the individual buyer.

These factors are as follows:

Price Factors:

Price Level - Selling price

Discount Rate - Discount off selling price

Information Sources: How consumer became aware of product

Advertisement: Paid for dissemination of information

Newspaper - where it appeared
Magazine - where it appeared
Television - where it was shown

Pamphlet: Printed material explaining the product

Manufacturers - distributed by manufacturer
Store - distributed by a store
Store Display - exhibited in a store

Previous experience with product - have used the product

Friend(s) - a person whose opinion you value

Colleagues(s) - an associate in your profession

Other - any source not mentioned above

Purpose of Usage: application of the product

For Professional Use - related to career/occupation
Teaching - preparation and/or classroom use
Research - used in professional studies and projects
Recording Grades - student record keeping
Consulting - used for client application and projects
Word Processing - letter and report writing
Test - preparation and grading of exams
Other - any professional use not mentioned above

For Personal Use - private use not related to career or occupation
Games - a manner of amusing oneself
Advice and Horoscope - forecasting ones personal future
Travel and Dining - information storage and review
Entertainment - performance or show used to amuse or divert
Home Finance - evaluation and record keeping on investments
Home Record Keeping - storage of important personal information
Home Learning and Education - instruction and learning tool
Mail, Communications, Word Processing - correspondence
Cataloging (i.e. recipes) - systemized listings
Other - any personal use not mentioned above

Product Factors

Secondary Memory Storage - larger capacity storage accessed to main storage
Cassette Tape - self contained, reel-to-reel, storage recording film
Floppy Disc - self contained flexible storage device resembling a phonograph record

Hard Disc - self contained inflexible storage device resembling a phonograph record
Disc Drive - a device which operate a floppy or hard disc
Single Disc Drive - a disc drive capable of using only one disc at a time
Dual Disc Drive - a disc drive capable of using only two disc at a time
Printers - the device that forms an image on paper
Draft Mode - a preliminary outline, rough copy, quality printer
Dot Matrix - a printer utilizing a series of dots
Correspondence Quality - final draft printer, better quality than draft mode
Dot Matrix - a printer utilizing a series of dots, more dots per area than dot matrix draft mode
Ink Inject - a printer utilizing a stylus injecting ink on paper
Letter Quality - a final draft printer of fine quality
Daisy Wheel - a printer utilizing a wheel shaped like a daisy with a character on each petal
Laser - a printer that uses lazer technology in order to print
Software - internal programs or routines to simplify programming and computer operation
Availability - accessible with slight or normal effort
Ease of Use - the ease in using the software

Brand: a specific product identified to a particular manufacturer

Country of Manufacture: country in which microcomputer was made

Sample/Subjects

The population for this study consisted of full time members of five accredited graduate schools in business administration and teacher education. The graduate schools used in this study consisted of Boston College, Fairfield University, Providence College, St. John's University and Seton Hall University. All faculty members held academic rank ranging from instructor to full professor.

The population consisted of a total of 412 faculty members. Table 1 shows the breakdown of highest degrees earned by the sample population.

Table 1

Analysis of Faculty's Highest Degrees Earned Within Selected Graduate Institutions

GRADUATE SCHOOLS - TEACHER EDUCATION

	BACHELOR	MASTER	DOCTOR	TOTAL
BOSTON COLLEGE	-	-	40	40
FAIRFIELD UNIVERSITY	-	23	28	51
PROVIDENCE COLLEGE	-	2	6	8
SAINT JOHN'S UNIVERSITY	-	-	33	33
SETON HALL UNIVERSITY	-	8	30	38
SUBTOTAL	0	33	137	170

GRADUATE SCHOOLS - BUSINESS ADMINISTRATION

	BACHELOR	MASTER	DOCTOR	TOTAL
BOSTON COLLEGE	1	9	48	58
FAIRFIELD UNIVERSITY	0	3	14	17
PROVIDENCE COLLEGE	1	9	14	24
SAINT JOHN'S UNIVERSITY	3	14	74	91
SETON HALL UNIVERSITY	1	13	38	52
SUBTOTAL	6	48	188	242
TOTAL	6	81	325	412

The faculty members were selected from published school catalogues. A questionnaire was sent to each faculty member with a cover letter explaining the purpose of the study. (See appendix A). This letter stated the results were to be reported anonymously. It also stated that the results would be sent to the individual respondents if their names and addresses were returned with the questionnaire.

A sample of 136 was available for the analysis. This size yields power greater than .95 to detect a moderate ($f^2 = .12$) at the .05 level[2] of significance. As with the sample in Table 1, the participants were selected from published college catalogues.

Questionnaire Design and Validation

The primary objective in designing the questionnaire was to obtain specific qualitative and quantitative information with tolerable levels of accuracy and completeness. Special attention was given to its design in order to insure that the respondent would have a clear understanding of the instructions on what was required as well as the comprehension of the information sought in the questions. Confidentiality was stressed to elicit cooperation and trust. This objective was accomplished by carefully developing a cover letter which accompanied the instrument. Consideration was given in developing the questions that would result in the accurate classification

of the data and verification of the respondents. In addressing the dysfunctional effects that many occur, care was taken not to induce bias, influence and responses, or confuse the person completing the questionnaire.

In designing the questionnaire, measures were taken to identify the dependent variables, business and teacher education faculty, in order to accurately classify the subjects.

For the purpose of accurately identifying the independent variables, price factors, information sources, purpose of usage, and product factors, in-depth interviews were conducted with ten subjects. Three were professors in teacher education and three were professors in business administration. All six of these individuals owned a microcomputer and used it for both professional and personal applications. The remaining four subjects were microcomputers sales people who had sold their products to professors in teacher education, business administration, and other non-academic users.

The initial instrument was tested at the International Graduate School in St. Louis, Missouri, in July, 1984 involving twenty-seven individuals. In this group thirteen were from teacher education and fourteen from business administration. This procedure was selected in order to validate the questionnaire and test it for clarity of instructions and accurate understanding of the questions. Minor adjustments and corrections were made and the

instrument was then re-tested, involving twenty-five academicians. Of this group twelve were from Teacher Education and thirteen were from Business Administration.

These respondents were selected from schools of Teacher Education and Business Administration located in the metropolitan New York area. No discrepancies were found as a result of this test.

When the completed questionnaires were returned to the researcher they were reviewed for accuracy and completeness. These instruments were then prepared for data entry utilizing a computer.

Programs were written to present and format the data as well as to perform the required statistical procedures as set forth in the methodology chapter of this study. The resulting printouts of these programs were used by the researcher in preparing the analysis and results of this study.

Research Questions

Several relationships concerning the subjects (both the business administration and teacher education faculty) were considered within the context of the adoption process model. This model is described in detail at the beginning of this chapter. The adoption process model - awareness, interet, evaluation, trial, and adoption, shows the subjects as they pass through the stages of the model. It was assumed that the independent variables would have

influence over the adoption process of the dependent variables in varying degress.

Research Questions for Business Administration Faculty

Among the various influencing factors (independent variables) on the business administration faculty's adoption process, some are supposed to exert more influence than others at a certain stage of the adoption process. It was hypothesized that at the early stages of the adoption process the importance of information sources as the influencing factor on the business faculty's behavior would be greater than other variables such as the purpose of usage, the brands, and the prices.

More specifically, business administration faculty's information sources at the early stages are greater than the purpose of usage (professional and personal preference), which is greater than or equal to brand which is greater than the price factors.

The research question tested was: What are the interactions of Business Administration Faculties' buying decisions at the early stages of the adoption process and the ranking of importance of the influencing factors of:

Information Sources > Purpose or Usage (Professional > Personal) = Brand > Price Factors > Product Attributes.

The second research question to be tested was that in the later stages of the adoption process, the importance of information sources would become less than those

influencing factors as the purpose of usage, the brands, and the prices.

The research question was: What is the relationship at the latter stages of the adoption process between the degree of sensitivity of Business Administration Faculties and the independent variables of:

Purpose of Usage | Professional and Personal Information Sources | Price Factors | Brand Product Attributes.

Research Questions for Teacher Education Faculty

What are the interactions of Teacher Education Faculties' buying decisions at the early stages of the adoption process and the ranking in importance of influencing factors:

Information Sources | Price Factors | Purpose or Usage | Professional and Personal = Brand | Product Attributes.

It was felt that the teacher education faculty at the late stages would consider price most important. Use or application followed, with lesser consideration given to brand. Finally, the source of information was considered to be less important at this stage.

The reserach question tested was: What is the relationship at the latter stages of the adoption process between the degree of sensitivity of Teacher Education Faculty and the independent variables of:

Professional
Price Factors > Purpose or Usage and Personal = Brand >
Information Sources > Product Attributes.

Summary

This chapter was designed as a two-part investigation of the research questions relevant to the adoption process of microcomputers in education. Part I provided a description of the research design and the subjects involved, 412., academicians in teaching and research on Business Administration and Teacher Education faculties from five selected colleges and universities. Part II offered an explanation of the research questions, with particular emphasis on the various psychological stages a potential consumer experiences in the adoption process of the microcomputer for selected groups of academicians. To this end, dependent information concerning the use of questionnaire data was included.

CHAPTER IV

RESULTS AND DISCUSSION

The chapter reports the analysis of data. The chapter is separated into two major parts. The first part, an overview and summary, correlates the data colleged. The second part discusses the results of the analysis.

Data Summary

In order to control unmeasured effects, the five institutions were selected from the same geographical area located in the Northeastern section of the United States and had similar educational missions and goals. The academic programs both in Business Administration and Teacher Education Departments at Boston College, Fairfield University, Providence College, St. John's University, and Seton Hall University were carefully examined and were found to meet the same curriculum standards set forth by the Middle States Association on accreditation. The faculties at these colleges and universities possessed similar degrees and faculty rank.

The central concern of the study was to examine, if and to what extent, the various attributes of personal computers (the independent variables) have upon the behavior of the college faculty (the dependent variables).

In order to examine the relationship between the dependent variables and the independent variables a

questionnaire was developed which is included in appendix A.

The procedures for administering the questionnaire were as follows: Business Administration faculty and Teacher Education faculty at the five institutions were sent a questionnaire, a self-addressed stamped envelope and a cover letter which explained the objective and importance of the study. This letter also asked for their cooperation in completing the questionnaire. The respondents were appropriately thanked and requested to return the questionnaire by a specific date, allowing a reasonable span of time of six weeks. The letter also emphasized that responses to the questionnaire were anonymous and would remain confidential. The published results would only include aggregate findings and would be sent to the respondents if their address was included with the returned questionnaire.

The data collected were then analyzed by comparing the mean score of those groups such as the Awareness and Adoption respectively in terms of their rating on the independent variables when these groups move step by step in the psychological process of the buying behavior model. The standard deviation of the mean score was also calculated. The significance of the difference, if any, among the mean scores was also treated at .05 level respectively.

Analysis of Business Administration Faculty at the Awareness Stages (including the Awareness and Interest Stages)

Table 2a shows the Business Faculty's rating on the degree of importance of various independent variables in their buying behavior.

The Business Faculty is classified into the two groups, i.e., the Awareness group and the Adoption group respectively depending upon their responses to the question about how ready they are to the buying decision of the personal computer. The first group, i.e., the Awareness group includes the two subgroups such as the faculty who are aware of the existence of the personal computer (the Awareness Stage), and those who are interested in the personal computer (the Interest Stage).

The Adoption group includes three subgroups such as the faculty who evaluate the different models according to their criteria (the Evaluation group), those who try to use the model (the Trial group), and finally, those who have decided to buy and/or have already bought the personal computer (the Adoption group). The independent variables are those which are supposed to have impacts, with a varying degree, on the Faculty's psychological process in their buying decision. They are the price-related, information-related, usage-related, product attributed-related, and the brand-related variables. Each of these categories of independent variables contains subgroups of variables but in this analysis, these subgroups were merged into these five independent variables.

Table 2a

Ratings of Variables by Business Faculties

Faculty Variables at different stages		Price	Information	Usage	Product Attributes	Brand
Business Faculty at Awareness Stages	Mean Score	3.61	2.99 **	2.45 **	3.18 *	3.03 *
	Standard Deviation	.16	.18	.14	.31	.22
	Ranking	1	4	5	2	3
Business Faculty at Adoption Stages	Mean Score	1.85	1.92	1.86	1.99	1.93
	Standard Deviation	.09	1.0	.11	.17	.13
	Ranking	5	3	4	1	2

Note: 1) In the questionnaire, the respondents (the faculties) were asked to follow the following rating system to evaluate the varibles:

5 points = very important
4 points = important
3 points = somewhat important
2 points = not very important
1 point = not at all important

*The asterick(s) indicates that the significant difference existed between the highest mean score - variable and the rest of variables as follows:

* significant at .05 level
** significant at .01 level

The Business Faculty at the Awareness Stage, the initial state of the buying process, showed the following characteristics:

The most important variable influencing on their psychological process of buying behavior was the price-related variable followed by the product attributed-related variable. The third variable was the brand and the fourth was the information. The least important influential variable for the Awareness group's psychological process of buying behavior was the usage-related variable. The rank order of the variables based on the degree of importance for Awareness group of Business Faculty was found to be as follows: (1) the price-related variable, (2) the product attributes-related variable, (3) the brand-related variable, (4) the information-related variable, and (5)the usage-related variable. It has been interpreted that the rank order of the variables in terms of the importance of them for the Awareness group of Business Faculty would be: (1) information sources, (2) the usage (professional and/or personal usage), (3) brand, (4) price and (5) product attributes. The result of the analysis indicated that the assumption proposed by our research question should be rejected. The Business Faculty at the Awareness Stage were found to be more price-related variable oriented. This means that they are very price conscious from the initial stage of the buying behavior of the personal computer. They are also product attribute conscious, the second

important variable, and the brand was also found to play an important role in influencing the buying behavior of the Business Faculty at the Awareness Stage. The information source as well as the usage purpose, whether professional or personal, were not very important factors to affect the Business Faculties' psychological process of buying behavior, at their Awareness Stage.

Analysis of Business Administration Faculty at the Adoption Stages

The Business Faculty at the Adoption Stage was assumed to be influenced by the following variables in order: (1) the usage, (2) price, (3) brand, (4) information source, and (5) the product attributes. Table 2a reveals that the Business Faculty at the adoption stage put the importance of the variables for their psychological process of buying behavior as follows: (1) product attributes, (2) brand, (3) information, (4) usage, and (5) price. Again, the hypothesis for the Adoption group of Business Faculty was rejected. The product attribute-related variables, contrary to our hypothesis, was found to be the most important variable for the Business Faculty at the adoption stage. The ranking of brand was reversed between the hypothesis and the finding, i.e., in the research question it was ranked the third while in the findings, it was the second. By the same token, the fourth ranked information in the research question was found to be ranked third in the finding. Both the usage and price were found to be

less and/or least important but they were assumed to be the most and the second most important for the Business Faculties' psychological process of buying behavior.

Analysis of Teacher Education Faculty at the Awareness Stages

Table 2b shows the summary of Education Faculties' rating on the variable (the price, information, usage, product attributes, and brand) about their importance in the buying process of computer.

The Teacher Eduation Faculty at the Awareness Stage gave the highest mean score of importance to the price. The second important variable was the brand followed by the information, usage, and product attributes in that order. It was assumed that the rank order of the variables based on the importance of these variables for the Teacher Education Faculty's buying process at the Awareness stage would be as follows: (1) information, (2) price, (3) usage, (4) brand, and (5) product attributes. The research question was to some extent accepted due to the fact that both the price and information were ranked second and first respectively, although in our research question they were ranked the first and second. The third variable, the usage, has been also ranked third in the research question. Overall, it can be safely concluded that the assumption proposed by the research question was fairly accepted. One interesting fact was that as in the case of the Business Faculty at the Awareness Stage, the price factor was

Table 2b

Ratings of Variables by Teacher Education Faculties

Faculty Variables at different stages		Price	Information	Usage	Product Attributes	Brand
Teacher Education Faculty at Awareness Stage	Mean Score	4.00	2.85 **	2.82 **	2.68 *	2.95 *
	Standard Deviation	.34	.23	.19	.16	.20
	Ranking	1	3	4	5	2
Teacher Education Faculty at Adoption Stage	Mean Score	4.26	3.00 **	2.86 **	3.85 **	2.93 **
	Standard Deviation	.64	.23	.22	.47	.36
	Ranking	1	3	5	2	4

Note: 1) In the questionnaire, the respondents (the faculties) were asked to follow the following rating system to evaluate the varibles:

5 points = very important
4 points = important
3 points = somewhat important
2 points = not very important
1 point = not at all important

*The asterick(s) indicates that the significant difference existed between the highest mean score - variable and the rest of variables as follows:

* significant at .05 level
** significant at .01 level

evaluated as the most important variable for the Teacher Education Faculty at the Awareness Stage for their psychological process of buying behavior. Both the Business and Teacher Education Faculty were very price conscious at the initial stage of their buying process.

Analysis of Teacher Education Faculty at the Adoption Stages

The Teacher Education Faculty at the Adoption stage (including those subgroups as the evaluation, trial, and the adoption) were found to have given the importance to variables in descending order as follows, (see Table 2b): (1) the price, (2) product attributes, (3) information, (4) brand, and (5) usage. According to our research question however, the rank order of the variables based on the Teacher Education Faculties' evaluation was assumed to be as follows: (1) usage, (2) price, (3) brand, (4) information, and (5) product attributes. The usage, the first-ranked variable in the research question was found to be ranked the last. The price, ranked the first in the hypothesis was ranked second in the findings of Table 2b. The research question about the price was therefore found to be fairly correct. The ranking of the importance of the information and the brand were reversed between the research question and the actual findings, i.e., in terms of information, the third ranked in the research question but it was found to be fourth ranked in the actual finding. The brand was assumed to be ranked fourth but it actually

was ranked third. The product attribute, ranked second in the research question were found to be the fifth in the actual ranking by the Teacher Education Faculty at the Adoption Stage. Therefore, the assumption proposed by the research question was rejected.

Comparison of Variable Ranking Between the Business Faculty and the Teacher Education Faculty

It is possible to compare how both the Business Faculty and Teacher Education Faculty at different stages of buying process rate the variables. The summary of the rating of variables by both the Business and Teacher Education Faculties at the Awareness Stage is shown as follows:

Table 3a

Summary of the Rating of Variables by Business and Teacher Education Faculties at the Awareness Stage

	Price	Information	Usage	Product Attributes	Brands
Business Faculty at Awareness Stage	3.61 (1st)	2.99 (4th)	2.45 (5th)	3.18 (2nd)	3.03 (3rd)
Teacher Education Faculty at Awareness Stage	4.00 (1st)	2.83 (3rd)	2.82 (4th)	2.68 (5th)	2.45 (2nd)

For both the Business and Teacher Education Faculty, the price was found to be the most important variable at the Awareness Stage for their buying psychology. The ranking of the other variables shows variety. The information was found to be fourth for the Business Faculty

and to be third for the Teacher Education Faculty, overall, being less important for the Awareness Stage group for their buying psychology. Also the usage was found to be less and/or least important for both the Business and Teacher Education Faculties. The product attributes were found to be important, the second ranked, for the Business Faculty, but the least important for the Teacher Education Faculty. The brand was found to be fairly important for both faculties in Business and Teacher Education, ranked the third and the second respectively by the Business and Teacher Education Faculty.

As to the rating of variables by the Business and Teacher Education Faculties at the Adoption Stage, some interesting facts revealed as follows:

Table 3b

Summary of the Rating of Variables by the Business and Teacher Education Faculties at the Adoption Stage

	Price	Information	Usage	Product Attributes	Brands
Business Faculty at Adoption Stage	1.85 (5th)	1.92 (3rd)	1.86 (4th)	1.99 (1st)	1.93 (2nd)
Teacher Education Faculty at Adoption Stage	4.26 (1st)	3.00 (3rd)	2.86 (5th)	3.85 (2nd)	2.93 (4th)

First, the Business Faculty did not think much of the price as an important factor in their buying psychology, rather they were found to give the highest importance to the product attributes allowed by the brands, information,

usage and lastly the price. This indicates that the Business Faculty changes their emphasis in evaluating the variables as they develop their psychological process of buying behavior toward the final stage, i.e., from the price-oriented (conscious) at the Awareness Stage to the product attributes-oriented at the Adoption Stage. The Teacher Education Faculty, on the other hand, maintains their basic emphasis on the price as the deciding factor for the buying psychology from the initial stage of awareness to the later stage of adoption. They also emphasized the product attributes as the important variable in their buying decision, the same tendency manifested by the Business Faculty. The ranking of information was the same, third, between the Business and Teacher Education Faculty. The usage was regarded as less important by both the faculties, being ranked the fourth by the Business Faculty, and the fifth by the Teacher Education Faculty respectively. The brands were ranked differently. It was considered important by the Business Faculty, who ranked it second, considered important by the Teacher Education Faculty, who ranked it fourth.

Discussion

This study examined the evaluation by the Business and Teacher Education Faculties at varying degrees of buying psychology on the various factors (variables) that have the impact on the subjects' buying decision/process. The major findings derived from the analysis were as follows: (1)

Throughout the process of buying decision, which contains five stages, the price-related variables were found to be the most important ones affecting the psychological process of the faculty toward their buying decision, i.e., the adoption. The exceptional case was the Business Faculty at the Adoption Stage. They placed the least importance on the price variable for their adoption. This, however, may be explained by the fact that once they have the positive psychological frame for the product at the initial stage (the Awareness Stage), the liking/convinced attitude becomes overwhelming and the price factor, which usually correlates negatively to the buying behavior, loses its power to influence the subjects' buying psychology. (2) The product attributes were also found to be playing an important role, the second to the price, affecting the faculties' psychological frame in their buying behavior. This is particularly true for both the faculties in Business and Teacher Education Faculty at the Adoption Stage. The exceptional case is the Teacher Education Faculty at the Adoption Stage who do not give significant importance to this variable. On the contrary, this group thinks the price variables are the most important factors for their adoption process.

(3) The information was ranked third (except for the Awareness Stage of the Business Faculty) throughout the adoption process. The function and impact of the information sources for the Business and Teacher Faculties

were found to be moderate, indicating that although this variable exerts its power to some extent on the faculties' buying process, it is not as critical as the price and the product attributes. This moderation of power of information as the influencing variable can be explained by the fact that by the time of exposure to the existence and publicity accorded the personal computer, both the Business and Teacher Education Faculties have been well informed of the product. Therefore, they do not need information about the personal computer.

(4) It is an interesting finding that the usage for professional or personal purposes was not regarded highly by both Business and Teacher Education Faculties. Again, this attitude might be explained by the fact that they were already aware of the function of the personal computer, and that the usage itself does not play an important role in the psychological process of the respective Faculties.

(5) The faculties showed a mixed response to the brands. For the Business Faculty, the importance of brands increased as they moved upward in the psychological process of adoption, while the brands lost the influencing power on the Teacher Education Faculty as they moved upward toward adoption.

In all, we can conclude that both the Business and Teacher Education Faculties have shown common response to certain variables, such as the price (the most important), product attributes (the second important), information (the

third important) and the usage (the fourth important) with some variation.

Summary

The intention in Chapter IV was to analyze the tabulated data resultant from the questionnaire responses and to organize the results in a cogent statement. The primary purpose of the findings in this chapter was to identify and examine which attributes of the personal computer influenced the behavioral characteristics of potential purchasers, i.e., those academicians from selected Business Administration and Teacher Education faculties who responded to the questionnaire. Because careful analysis of human responses at each stage of the Adoption Process was the domain of inquiry in this chapter, a detailed account of relevant data processing was included for clarity of intention and validity of design.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The objective of the study was to examine the dependent and independent variables involved in the adoption process for personal computers and to test whether there existed a significant difference (statistically) between or among the groups.

The study tested Diffusion Theory (Rogers 1962) as it related to the adoption of an innovation and the adoption process as the individual passed through the stages (awareness, interest, evaluation, trial and adoption) from the time when he became cognizant of the existence of the new product until the time of actual purchase or adoption (Schiffman and Kanuck 1983, Loudon and Della Bitta 1984, Robertson, Zielinski and Ward 1984). Rejection (non-adoption) may take place at any one of the five stages (Davis 1981, Hisrich and Peters 1984).

This study showed that the Adoption Process did not have a moderating effect on both Business Administration Faculty and Teacher Education Faculty at either the awareness or adoption stages. The questionnaire selected did not have the moderating effect to support the Adoption Process. A possible explanation for this finding is that the sample size was too small. The group of independent variables used in the study was too large for the sample

size causing a limiting factor occurrence in the generation of the statistics.

This study, upon more detailed analysis, did not take into account the foundations in the different majors and experiences participating faculties had realized prior to this study. This background and the possible personal computer experience of the sample could produce different responses on the Likert Scale.

It is possible that the Adoption Process was too ambiguous in content to have a significant effect at the .05 level. It is this degree of significance which rejected the hypothesis and poses a question relating to the ultimate contribution of the study.

Recommendations for Further Research

This study of the relationships among and between the independent variables, price factors, information sources, purpose of usage, product factors and brand, and the dependent variables pertinent to business administration faculty and teacher education faculty, appears to be a fruitful area for future research. A logical extension from this study would be to refine Diffusion Theory and Innovation Theory as it relates to the stages in the adoption process.

Possible avenues to direct future research that should be examined include:

1. A study repeated with modification in order to re-examine the relationship of diffusion of innovation, with the adoption process.
2. A more extensive study be undertaken with the purpose of sampling several geographical regions and then comparing the results to the original study.
3. An additional area should be researched to include public and not-for-profit institutions for the purpose of comparing the results in order to identify significant differences, if they exist.
4. A review of literature demonstrated a need for more information on consumer behavior and buying decisions. Longitudinal studies should be designed to gather, analyze and interpret data in these subject areas.
5. Further research should be conducted to explain the relationships that exist between and among innovation, diffusion and adoption.
6. More probing research is essential to measure the influence of opinion leadership on diffusion and the adoption process.
7. Studies more rigorous in nature are required to advance a greater understanding of the stages and relationships between and among the stages of the adoption process.

8. Research is needed to further examine the diffusion process in order to reduce the time the consumer take as they pass through the stages of adoption process.
9. Bibliographical entries in reference journals should be reviewed in the light of the most current modes of thought in an area so critical in current expression of immediate phenomena.
10. Independent works, available in professional journals, such as those described above, require intensive review, in a manner similar to the format proposed in #9.

BIBLIOGRAPHY

Abernathy, Sandra Marshall. "Analysis of Microcomputer Use and Policy at New Mexico State University." Ph.D. dissertation, New Mexico State University, 1982.

Addison, Stauton D., Jr. "From Freshmen to Faculty: Georgia Tech's Computer Network Serves All." T.H.E. Journal 12 (May 1985): 62-64.

Bamberger, Richard Edwin. "A Study of Organization Climate, Faculty Belief Systems, and Their Relation to the Rate of Adoption of Educational Innovations in Selected School Districts." Ed.D. dissertation, State University of New York at Albany, 1970.

Barnett, Homer G. Innovation: The Basis of Cultural Change. New York: McGraw-Hill Book Company, 1953.

-------. "Personal Conflicts and Culture Change." Social Forces. (October 1983): 166-172.

Baron, Frank, and Welsh, George S. "Artistis Perception as a Possible Factor in Personality Style: Its Measurement by a Figure Preference Test." The Journal Psychology 33,2 (April 1952): 199-203.

Billings, Karen, and Gass, Stephen. "Adding a Micro to Your School Picture." Electronic Learning, 1 (January/February 1982): pp. 35-40.

Boone, Louis E. "The Search for the Consumer Innovator." Journal of Business 43 (April 1970): 135-40.

Bork, Alfred. "Computers in Education Today - and Some Posible Futures." Phi Delta Kappan 66 (December 1984): 239-244.

-------. "Education and Computers: The Situation Today and Some Possible Futures." T.H.E. Journal 12 (October 1984): 92-97.

Brase, Charles Henry, and Brase, Corrinne Pellillo. Understanding Statistics. 2nd Ed. Lexington, Massachusetts: D.C. Heath and Company, 1983.

Brown, William H. "Innovation in the Machine Tool Industry." Quarterly Journal of Economic 71 (August 1957): 406-25.

Burning, James L., and Kintz, B. L. Computational Handbook of Statistics. 2nd Ed. Glenview: Scott, Foreman and Company, 1977.

Caissy, Gail A. "Evaluating Educational Software: A Practitioner's Guide." Phi Delta Kappan (December 1984): 249-250.

Campbell, P. B. "Computers and Equity." Educational Digest 50 (March 1985): 58-61.

Chorover, Stephan L. "Cautions on Computers in Education." BYTE (June 1984): 223-226.

Cohen, Jacob. Statistical Power Analysis for the Behavioral Sciences. New York: Academic Press, Inc., 1969.

Darden, William R., and Perreault, Jr.; William D. "Identifying Interurban Shoppers: Multiproduct Purchasing Patterns and Segmentation Profiles." Journal of Marketing Research 13 (February 1976): 51-60.

Darden, William R., and Reynolds, Fred D. "Backward Profiling of Male Innovators." Journal of Marketing Research 11 (February 1974): 79-85.

Davis, Kenneth R. Marketing Management. 4th Ed. New York: John Wiley and Sons, Inc., 1981.

Dickerson, Mary Dee, and Gentry James W. "Characteristics of Adopters and Non-Adopters of Home Computers." Journal of Consumer Research 10 (September 1983): 225-35.

Elmer-Dewitt, Philip. "A Machine on Every Desk." Time (October 21, 1985): 71.

-------. "Matriculating at Supercomputer U." Time (March 11, 1985): 125-55.

Emergy, Edwin; Ault, Phillip; and Agee, Warren. Introduction to Mass Communications. New York: Dodd, Mead and Company, 1960.

Feldman, Lawrence P., and Armstron, Gary M. "Identifying Buyers of a Major Automotive Innovation." Journal of Marketing 39 (January 1975): 47-53.

Fiske, Edward B. "Computers in the Groves of Academe." The New York Times Magazine (May 13, 1984): 41, 86-88.

Fliegel, Frederick C., and Kivlin, Joseph E. "Attributes of Innovations as Factors in Diffusion." American Journal of Sociology 72 (November 1966): 235-48.

Grayson, Dr. Lawrence P. "An Overview of Computers in U.S. Education." T.H.E. Journal 12 (August 1984): 78-83.

Gwynne, Peter. "Computers are Sprouting in the Groves of Academe." Technological Review 24 (October 1984): 19-26.

Haigh, Roger W. "Planning for Computer Literacy." Journal of Higher Education 56 (March/April 1985): 161-172.

Hirschman, Elizabeth C. "Innovativeness, Novelty Seeking, and Consumer Creativity," Journal of Consumer Research 7 (December 1980): 283-95.

Hisrich, Robert D., and Peters, Michael P. Marketing Decisions for New and Mature Products. Columbus: Charles E. Merrill Publishing Company, 1984.

Irvine, Phyllis. "Introducing Faculty to Microcomputers." Health Education, October 1983. 13-14.

Jacoby, Jacob. "Personality and Innovation Proneness." Journal of Marketing 8 (May 1971): 244-47.

Johnson, Richard M. "Market Segmentation: A Strategic Management Tool." Journal of Marketing Research 8 (February 1971): 13-18.

Kasulis, Jack J.; Lusch, Robert F.; and Stafford, Jr., Edward F. "Consumer Acquisition Patterns for Durable Goods." Journal of Consumer Research 6 (June 1979): 47-57.

Katz, Elihi. "The Two Step Flow of Communications: An Up-to-date Report on a Hypothesis." Public Opinion Quarterly 21 (Spring 1957): 61-78.

Katz, Elihu, and Lazarsfeld, Paul F. Personal Influence. Glencoe: The Free Press, 1955.

Katz, Elihu; Levin, Martin L.; and Hamilton, Herbert. "Traditions of Research on the Diffusion of Innovation." American Sociological Review 28 (April 1963): 237-52.

Kerlinger, Fred and Pedhazur, Elazur. Multiple Regression in Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1973.

Komoski, P. Kenneth. "Educational Computing: The Burden of Insuring Quality." Phi Delta Kappan (December 1984): 244-248.

LaBay, Duncan, and Kinnear, Thomas C. "Exploring the Consumer Decision Process in the Adoption of Solar Energy Systems." Journal of Consumer Research 8 (December 1981): 271-78.

Levin, Doron P. "Douglas E. Van Houweling is Named University of Michigan Computer Czar." The Wall Street Journal (November 30, 1984): 14.

Loudon, David L., and Della Bitta, Albert J. Consumer Behavior. 2nd Ed. New York: McGraw-Hill Book Company, 1984.

McEwen, William J. "Bridging the Information Gap." Journal Consumer Research 4 (March 1978): 247-51.

McFall, John. "Priority Patterns and Consumer Behavior." Journal of Marketing 33 (October 1969): 50-5.

McPherson, Michael S. "A Change for the Better?" Change 16 (April 1984): 22-27.

Mace, Richard E. "Development of a Campus Information Utility." T.H.E. Journal 12 (April 1985): 68-70.

Mardron, Thomas W. "Micros on Campus." Microcomputing. (September 1982): 36-7.

Masat, Francis E. "Computer Literacy in Higher Education." Research Report No. 6, 1981, Washington, D.C.: American Association for Higher Education.

Masland, Andrew Tyson. "Organizational Influences on Computer Use in Higher Education." Ed.D. dissertation, Howard University, 1982.

-------. "Encouraging Innovative Academic Computing" Educational Record. 65 (Fall 1984): 36-42.

-------. "Cultural Influences on Academic Computing." Liberal Education 70 (Spring 1984): 83-90.

Miller, Inabeth. "An Examination of Microcomputers in Educational Setting with Particular Focus Upon Library/Media Operations: Realities and Possibilities. State of the Art." Ed.D. dissertation, Boston University School of Education, 1982.

Miller, Kenneth E., and Ginter, James L. "An Investigation of Situational Variation in Brand Choice Behavior and Attitude." Journal of Marketing Research 16, 1 (February 1979): 111-23.

Newcomb, Jack Ed. "College Stores and Computers and Students and Faculty." College Store Journal Vol. 49 No. 6 (October/November 1982): 97-100.

Osgood, Donna. "A Computer on Every Desk." BYTE (June 1984): 162-184.

Ostlund, Lyman E. "Identifying Early Buyers." Journal of Advertising Research 12 (April 1972): 25-30.

-------. "Perceived Innovation Attributes as Predictors of Innovativeness." Journal of Consumer Research 1 (September 1974): 23-9.

Peter, J. Paul. "Reliability: A Review of Psychometric Basics and Resent Marketing Practices." Journal of Marketing Research 16 (February 1979): 6-17.

Plummer, Joseph T. "Life Style Patterns and Commercial Bank Credit Card Usage." Journal of Marketing 35 (April 1971): 35-41.

Porter, Thomas C.; Swerdloe, Robert A.; and Staples, William A. "Who Uses Bank Debit Cards." Business Horizons 22 (February 1979): 75-83.

Redlich, Fritz. "Innovation in Business." American Journal of Economics and Sociology 10 (April 1951): 285-91.

Reese, Donald. "Attitudes of Collegiate Business Faculty and Management Personnel Toward Computers and Computer Utilization in Business." Ph.D. dissertation. The University of Iowa, 1967.

Reynolds, Fred D., and Darden, William R. "Mutally Adoptive Effects of Interpersonal Communication." Journal of Marketing Research 8 (November 1971): 449-53.

Robb, Frances Jindra. "Socio-Technical and Political-Technical Phenomena Associated with Faculty Adoption of Technology: A Delphic Analysis of Faculty Perceptions." Ph.D. dissertation, University of Minnesota, 1982.

Robertson, Thomas S. Innovation Behavior and Communication. New York: Holt, Rinehard and Winston, Inc., 1971.

-------. "The Process of Innovations and the Diffusion of Innovation." Journal of Marketing 31 (January 1967): 14-19.

Robertson, Thomas S., and Kenneday, James N. "Prediction of Consumer Innovation: Application of Multiple Diseriminant Analysis." Journal of Marketing Research 5 (February 1968): 64-9.

Robertson, Thomas S., and Meyers, James H. "Personality Correlates of Opinion Leadership and Innovative Buying Behavior." Journal of Marketing Research 6 (May 1969): 164-8.

Robertson, Thomas S., Zielinski, Joan; and Ward, Scott. Consumer Behavior. Glenview: Scott, Foreman and Company, 1984.

Rogers, Everette M. Diffusion of Innovations. New York: The Free Press of Glencoe, 1962.

-------. "New Product Adoption and Diffusion," Journal of Consumer Research 2,4 (March 1976): 290-301.

Rogers, Everett M., and Rogers, L. Edna. "A Methodological Analysis of Adoption Scales," Rural Sociology 26 (December 1961): 325-36.

Rogers, Everett M., and Shoemaker, Floyd F. Communications of Innovations. New York: The Free Press, 1971.

Roper, Elmo. "Researching the General Public," Public Relations 1 (October 1945): 1-6.

Saltsburg, Howard; Heist, Richard; and Olsen, Thor. "Microcomputers in a College Teaching Laboratory," T.H.E. Journal (October 1982): 53-55.

Schiffman, Leon G., and Kanuk, Leslie L. Consumer Behavior. 2nd Ed. Englewood Cliffs: Prentice-Hall, Inc., 1983.

Schumpeter, Joseph A. Business Cycles. Vol. 1 New York: McGraw-Hill Book Company, 1939.

Scott, William A., Osgood, D. Wane; and Paterson, Christopher. Cognitive Structure: Theory and Measurement of Individual Differences. New York: John Wiley and Sons, Inc., 1979.

Shaw, Stephen J. "Behavioral Sciences Offer Fresh Insights on New Product Acceptance." Journal of Marketing 29 (January 1965): 9-14.

Skinner, Kathleen Foye. "An Exploratory Study of the Trends of Microcomputers in Education and Preliminary Considerations for Determining and Implementation Strategy." Ed.D. dissertation, George Peabody College for Teachers of Vanderbilt University, 1982.

Sloan, Douglas. "On Raising Critical Questions about the Computer in Education, Teachers College Record, 85 (Summer 1984): 539-549.

Solorzano, Lucia. "Computers on Campus: The Good News, Bad News." U.S. News and World Report (October 7, 1985): 60-61.

Spero, Samuel. "Let Them Have Micros: An Approaoch to Computer Literacy for Teachers." T.H.E. Journal Vol. 10 No. 1 (September 1982): 127-29.

Staples, Betsy. "Educational Computing: Where Are We Now?" Creative Computing 11 (April 1985): 62.

Stern, Robert A. and Nancy. An Introduction to Computers and Information Processing. New York: John Wiley and Sons, Inc., 1985.

Summers, John O. "Generalized Change and Innovativeness," Journal of Marketing Research 8 (August 1971): 313-16.

Taylor, John W. "A Striking Characteristic of Innovators." Journal of Marketing Research 14 (February 1977): 104-7.

Turner, J. A. "Campus Computer Use Expected to Soar this Year as 'Early Follower' Colleges Try to Catch Pioneers." Chronicle of Higher Education 31 (September 4, 1985): 26.

Usher, Abbott Payson. A History of Mechanical Innovations. Combridge: Harvard University Press, 1954.

Wagschal, Peter H. "A Last Chance for Computers in the Schools?" Phi Delta Kappan (December 1984): 251-254.

The Wall Street Journal Index (February 1985): 34.

Zaltman, Gerald, and Wellendorf, Melanie. Consumer Behavior. New York: John Wiley and Sons, Inc., 1979.

APPENDIX A

COVER LETTER

George P. Kehr
6 Norge Avenue
Nanuet, New York 10954

Dear

My name is George Kehr and I am a member of the faculty of St. Thomas Aquinas College in Sparkill, New York.

I am in the process of collecting data on the purchase and use of personal computers (also known as microcomputers or desktop computers) for a research project.

You have been chosen to be a participant in the survey for this study. I want to obtain certain information from you concerning personal computers. Your answers to the questions in this survey are very important to the success of this research project.

I realize that completing this questionnaire will require some of your valuable time, but your cooperation is needed in order to lend validity and significance to this research project. I want you to know that I sincerely appreciate the time and effort that will involve you with answering the questions in the survey. If you would like to have a personal copy of the results, please fill in your name and complete address in the space provided on the last page of the questionnaire.

All of the information gathered in this study is anonymous, and will remain confidential. The published results will only include aggregate findings. No individual information will be released. Would you be kind enough to complete the questionnaire and return it to me in the self-addressed evelope provided as soon as possible. I would sincerely appreciate your returning the questionnaire to me by March 1, 1985.

Thank you for your thoughtful cooperation. I am,

Sincerely yours,

George P. Kehr

Enclosure
GPK:ac

APPENDIX A

Please answer all of the questions accordingly. Some of the questions are very basic, but are very necessary for the validity of the research project. Please do not take offense to the content of the questions.

DEFINITION OF PERSONAL COMPUTER:

Personal Computers (also known as Microcomputers) are defined as desk top computers that are used for personal and professional use. They are low cost (less than $10,000), based on microcomputer chips, personally controllable, and easily used. In relation to microcomputer and mainframes they are less expensive, smaller in size, slower in speed, and have less computing power.

1. Do you own a personal computer (also known as a microcomputer or desk top computer)?

   _____Yes _____NO

   If your answer is Yes, please go to question 8. If your answer is No, please go to question 2.

2. Are you aware of or do you know about the existence of the personal computer?

   _____Yes _____No

   If your answer is No, please do not answer the remaining questions. Please return your questionnaire to the researcher. If your answer is Yes, please go to the next question.

3. Are you interested in finding out more information about personal computers?

   _____Yes _____No

   If your answer is No, please go to question 6. If your answer is Yes, please go to the next question.

4. Are you actively involved in the process of evaluating information with the intention of buying a personal computer?

   _____Yes _____No

   If your answer is No, please go to question 6. If your answer is Yes, please go to the next question.

5. Have you actually tried or used a personal computer in order to determine whether or not you would be interested in buying one for your personal or professional use?

_____Yes _____No

Please go to question 6.

6. If you are going to buy a personal computer how much would you be willing to pay for it?

A. _____Less than $1,000
B. _____$1100 - $1500
C. _____$1600 - $2500
D. _____$2600 - $5000
E. _____Over $5000

Please go to question 7.

7. If you were going to buy a personal computer in what country would it be manufactured?

_____

Please go to question 11.

8. If you own a personal computer how much did you pay for it? Please select ony one.

A. _____Less than $1,000
B. _____$1100 - $1500
C. _____$1600 - $2500
D. _____$2600 - $5000
E. _____Over $5000

Please go to question 9.

9. If you already own a personal computer in what country was it manufactured?

_____

Please go to question 10.

10. If you already own a personal computer and were to buy another one, in what country would it be manufactured?

_____

Please go to question 11.

11. Please indicate to what extent each of the following factors influence your buying decision when purchasing a personal computer. Number "1" indicating not important at all, the number "5" indicating very important. Please circle a number from "1" to "5" for each of the factors listed below:

	Not Important at all	Not Very Important	Somewhat Important	Important	Very Important
PRICE FACTORS:					
Price Level	1	2	3	4	5
Discount Level	1	2	3	4	5
INFORMATION SOURCES:					
A. Advertisement:	1	2	3	4	5
Newspaper	1	2	3	4	5
Magazine	1	2	3	4	5
Television	1	2	3	4	5
B. Pamphlet:	1	2	3	4	5
Manufacturers	1	2	3	4	5
Store	1	2	3	4	5
C. Store Display	1	2	3	4	5
D. Prev. Experience with Product	1	2	3	4	5
E. Friend(s)	1	2	3	4	5
F. Colleague(s)	1	2	3	4	5
G. Other (specify)	1	2	3	4	5
PURPOSE OR USAGE:					
Professional Use:					
Teaching	1	2	3	4	5
Research	1	2	3	4	5
Recording Grades	1	2	3	4	5
Consulting	1	2	3	4	5
Word Processing	1	2	3	4	5
Test/Exams	1	2	3	4	5
Other	1	2	3	4	5

Please go to the next page.

	Not Important at all	Not Very Important	Somewhat Important	Important	Very Important
Personal Use:					
Games	1	2	3	4	5
Advice & Horoscope	1	2	3	4	5
Travel & Dining	1	2	3	4	5
Entertainment	1	2	3	4	5
Home Finance	1	2	3	4	5
Home Rec. Keeping	1	2	3	4	5
Home Learning & Ed.	1	2	3	4	5
Mail, Communication & Word Processing	1	2	3	4	5
Cataloging (ie Rec.)	1	2	3	4	5
Other (specify)	1	2	3	4	5
PRODUCT FACTORS:					
Secondary Memory Storage:					
Cassette Tape	1	2	3	4	5
Floppy Disc	1	2	3	4	5
Hard Disc	1	2	3	4	5
Disc Drives:					
Single Disc Drive	1	2	3	4	5
Dual Disc Drive	1	2	3	4	5
Printers:					
Draft Mode:					
Dot Matrix	1	2	3	4	5
Correspondence Quality:					
Dot Matrix	1	2	3	4	5
Ink Jet	1	2	3	4	5
Letter Quality:					
Daisy Wheel	1	2	3	4	5
Laser	1	2	3	4	5
Software:					
Availability	1	2	3	4	5
Ease of Use	1	2	3	4	5
Brand	1	2	3	4	5
Country of Manufacture	1	2	3	4	5

Please go the next page.

12. What is your primary area?

A. _____ Teaching Business subjects or a related area(s) at college or university.

B. _____ Teaching Teacher Education subjects or a related area(s) at a college or university.

C. _____ Other (Please specify.) _____

I would like to take this opportunity to thank you for your time and cooperation.

If you would be interested in receiving a copy of the results of this survey it would be my pleasure to provide you with it. Please print your name and address in the space provided below.

Name: _____

Address: _____

_____

APPENDIX B

MEAN SCORES FOR BUSINESS ADMINISTRATION FACULTY

AT THE AWARENESS STAGES

	TOTAL SCORE	TOTAL RESPONDENTS	MEAN SCORE
INDEPENDENT VARIABLES			
Price Factors			
Price Levels	63	16	3.94
Discount Rate	49	15	3.27
Information Sources			
Newspaper	41	16	2.56
Magazine	40	16	2.50
Television	29	16	1.81
Pamphlet Manuf.	48	16	3.00
Pamphlet Store	48	16	3.00
Store Display	42	15	2.80
Previous Experience with Product	55	16	3.44
Friends	59	16	3.69
Colleagues	65	16	4.06
Purpose or Use			
Teaching	55	16	3.44
Research	57	16	3.56
Recording Grades	38	16	2.38
Consulting	46	16	2.88
Word Processing	58	16	3.63
Test/Exams	45	16	2.81

Personal Use			
Games	22	16	1.38
Advice & Horoscope	18	16	1.13
Travel & Dining	22	16	1.38
Entertainment	24	16	1.50
Home Finance	38	16	2.38
Home Record Keeping	42	16	2.63
Home Learning and Education	44	16	2.75
Mail Commun. & Word Processing	51	16	3.19
Cataloging	28	16	1.75
Product Factor			
Cassette Tape	33	16	2.06
Floppy Disc	66	16	4.13
Hard Disc	44	16	2.75
Single Disc Drive	30	14	2.14
Dual Disc Drive	63	16	3.94
Printer Draft Mode Dot Mat.	43	16	2.69
Quality Dot Matrix	47	16	2.94
Printer Correspondence Quality Ink Jet	47	16	2.94
Printer Letter Quality			
Daisy Wheel	44	16	2.75
Laser	40	15	2.67
Software			
Availability	72	16	4.50
Ease of Use	72	16	4.50
Brand	59	16	3.69
Country of Manufacture	46	16	2.88

APPENDIX B

MEAN SCORES FOR BUSINESS ADMINISTRATION FACULTY

AT THE ADOPTION STAGES

	TOTAL SCORE	TOTAL RESPONDENTS	MEAN SCORE
INDEPENDENT VARIABLES			
Price Factors			
Price Levels	102	50	2.04
Discount Rate	83	50	1.66
Information Sources			
Newspaper	113	49	2.31
Magazine	131	50	2.62
Television	89	49	1.82
Pamphlet Manuf.	46	50	.92
Pamphlet Store	109	49	2.22
Store Display	119	49	2.43
Previous Experience with Product	78	49	1.59
Friends	76	48	1.58
Colleagues	94	49	1.92
Purpose or Use			
Teaching	80	49	1.63
Research	94	50	1.88
Recording Grades	115	50	2.30
Consulting	95	50	1.90
Word Processing	118	50	2.36
Test/Exams	61	50	1.22

Personal Use			
Games	98	50	1.96
Advice & Horoscope	57	50	1.14
Travel & Dining	64	50	1.28
Entertainment	76	49	1.55
Home Finance	117	50	2.34
Home Record Keeping	127	50	2.54
Home Learning and Education	131	50	2.62
Mail Commun. & Word Processing	73	49	1.49
Cataloging	84	50	1.68
Product Factor			
Cassette Tape	94	50	1.88
Floppy Disc	111	50	2.22
Hard Disc	52	50	1.04
Single Disc Drive	120	50	2.40
Dual Disc Drive	111	50	2.22
Printer Draft Mode Dot Matrix	76	50	1.52
Quality Dot Matrix	62	50	1.24
Print. Corres. Quality Ink Jet	117	50	2.34
Printer Letter Quality			
Daisy Wheel	61	50	1.22
Laser	140	50	2.80
Software			
Availability	131	50	2.62
Ease of Use	118	50	2.36
Brand	62	47	1.32
Country of Manufacture	123	48	2.56

APPENDIX B

MEAN SCORES FOR TEACHER EDUCATION FACULTY

IN THE AWARENESS STAGES

	TOTAL SCORE	TOTAL RESPONDENTS	MEAN SCORE
INDEPENDENT VARIABLES			
Price Factors			
Price Levels	87	22	3.95
Discount Rate	90	22	4.09
Information Sources			
Newspaper	45	22	2.05
Magazine	51	22	2.32
Television	48	22	2.18
Pamphlet Manual	51	22	2.32
Pamphlet Store	52	22	2.36
Store Display	53	21	2.52
Previous Experience with Product	76	22	3.45
Friends	86	22	3.91
Colleagues	94	22	4.27
Purpose of Use			
Teaching	78	22	3.55
Research	94	22	4.27
Recording Grades	64	22	2.91
Consulting	66	22	3.00
Word Processing	94	22	4.27
Test/Exams	66	21	3.14

Personal Use			
Games	41	22	1.86
Advice & Horoscope	31	22	1.41
Travel & Dining	32	22	1.45
Entertainment	42	22	1.91
Home Finance	66	22	3.00
Home Record Keeping	68	22	3.09
Home Learning and Education	70	22	3.18
Mail Commun. and Word Processing	71	22	3.23
Cataloging	50	22	2.27
Product Factor			
Cassette Tape	56	22	2.55
Floppy Disc	81	22	3.68
Hard Disc	65	22	2.95
Single Disc Drive	52	22	2.36
Dual Disc Drive	90	22	4.09
Printer Draft Mode Dot Matrix	61	22	2.77
Quality Dot Matrix	66	21	3.14
Prin. Corres. Quality Ink Jet	72	22	3.27
Printer Letter Quality			
Daisy Wheel	82	22	3.73
Laser	70	21	3.33
Software			
Availability	96	22	4.36
Ease of Use	95	22	4.32
Brand	68	22	3.09
Country of Manufacture	62	22	2.82

APPENDIX B

MEAN SCORES FOR TEACHER EDUCATION FACULTY

IN THE ADOPTION STAGES

	TOTAL SCORE	TOTAL RESPONDENTS	MEAN SCORE
INDEPENDENT VARIABLES			
Price Factors			
Price Levels	125	30	4.17
Discount Rate	122	28	4.36
Information Sources			
Newspaper	64	30	2.13
Magazine	83	30	2.77
Television	55	29	1.90
Pamphlet Manuf.	89	29	3.07
Pamphlet Store	79	29	2.72
Store Display	81	30	2.70
Previous Experience with Product	112	29	3.86
Friends	115	30	3.83
Colleagues	114	28	4.07
Purpose of Use			
Teaching	125	30	4.17
Research	124	30	4.13
Recording Grades	81	30	2.70
Consulting	102	30	3.40
Word Processing	131	29	4.52
Test/Exams	98	30	3.27

Personal Use			
Games	55	30	1.83
Advice & Horoscope	34	30	1.13
Travel & Dining	43	30	1.43
Entertainment	61	30	2.03
Home Finance	87	30	2.90
Home Record Keeping	79	29	2.72
Home Learning and Education	95	29	3.28
Mail Commun. and Word Processing	108	30	3.60
Cataloging	62	29	2.14
Product Factor			
Cassette Tape	65	30	2.17
Floppy Fisc	133	30	4.43
Hard Disc	76	30	2.53
Single Disc Drive	81	28	2.89
Dual Disc Drive	128	29	4.41
Printer Draft Mode Dot Matrix	102	30	3.40
Quality Dot Matrix	91	30	3.03
Prin. Corres.			
Quality Ink Jet	83	30	2.77
Printer Letter Quality			
Daisy Wheel	119	30	3.97
Laser	92	29	3.17
Software			
Availability	133	29	4.59
Ease of Use	133	30	4.43
Brand	109	30	3.63
Country of Manufacture	67	30	2.23

VITAE

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EDUCATION:

B.B.A. St. Francis College, Brooklyn, New York. Major Field: Management. Awarded June 1965.

M.B.A. Long Island University, Brooklyn, New York. Major Field: Marketing. Awarded January 1970.

C.A.G.S. Pace University, White Plains, New York. Major Field: Marketing Management. Awarded September 1982.

REALTOR New York State, Real Estate Broker.

EMPLOYMENT HISTORY

International Milling Company. Sales administration and customer service. January 1982 to January 1963.

St. Francis College. Attended college fulltime and worked several parttime jobs. January 1963 to June 1965.

Colortone Camera, Inc. Sales and customer service. June 1965 to November 1965.

M.A.I. Equipment Corporation. Marketing research, customer service, traffic management. December 1965 to April 1967.

AIRCO, Industrial Gasses Division. Sales analysis, forecasting, marketing research, product management. April 1967 to June 1969.

American Management Association. Programming seminars and courses in marketing. (U.S., Canada, Mexico). June 1969 to October 1972.

DiGiorgio Realty, Inc. Sales and sales management, residential and commercial. October 1972 to present.

Consulting. All marketing areas, sales training, general business management, real estate. January 1973 to present.

EMPLOYMENT HISTORY (Continued)

St. Thomas Aquinas College. Tenured Associate Professor of Business Administration. September 1975 to present. Director of Business Internships. September 1977 to present. In addition to my teaching duties I am responsible for over 600 business majors, 12 fulltime and 14 parttime faculty. I also advise in excess of 100 business majors. I also teach as an adjunct.

Accepted by International Graduate School

in partial fulfillment of the requirements for the

Doctor of Business Administration

Mentor

Committee Member

Dean